--FIG. 4 shows a flow chart for implementing the present invention.--

Page 36, after line 10, and before the paragraph starting with "The construction process of the spread-spectrum access", insert the following new paragraph:

--FIG. 4 shows a flow chart for the present invention. In FIG. 4, a pair of orthogonal complementary code groups (C1, S1), (C2, S2) are selected. Each code within the orthogonal complementary code groups is spread with data X1, X2. The resulting spread-spectrum signal is sent over a communications channel. At a receiver, as shown in FIG. 4, the received spread-spectrum signals are despread, generating outputs Y1, Y2.--

IN THE CLAIMS:

1. (currently amended) A ~~construction~~ method ~~of the spreading~~ used by a radio system, for generating spread spectrum multiple access codes with a zero correlation window, ~~wherein the method includes the following steps~~ comprising the steps of:

selecting a pair of ~~basically~~ orthogonal complementary code groups (C1, S1), (C2, S2) with each code within the orthogonal complementary code groups having a code length ~~as~~ with N chips, where N is a number of chips, ~~in which the acylic auto-correlation and cross-correlation functions of code C and~~

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~~code S oppose each other but also complement each other except at the~~ an ~~origin, the~~ with values of auto-correlation and cross-correlation functions after ~~summarization are~~ summation being zero except at ~~the~~ an origin; and

~~based on the actually required maximum number of subscriber accesses,~~ spreading, using a tree structure, based on a required maximum number of subscriber accesses, codes from the ~~the code length and a code number of the basically~~ orthogonal complementary code group ~~in a tree structure~~, ~~the~~ with values of auto-correlation functions of each code of the ~~spreaded~~ spread orthogonal complementary code group ~~are~~ being zero except at the origin, ~~while~~ with the cross-correlation functions of each code of the orthogonal complementary code group forming the ~~a~~ zero correlation window about the origin ~~, with the window size greater than or equal to 2N-1~~.

2. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 1, ~~wherein~~ with the spreading step forming the zero correlation window with the size of the zero correlation window ~~is~~ greater than or equal to ~~2 the~~ a maximum relative time delay inside each access code of the radio system ~~or between them~~, the maximum relative time delay ~~is~~ being dependent on ~~the~~ a summation of the maximum time dispersion of the channel and the timing error of the radio system.

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3. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 1, ~~wherein~~ further comprising the steps of:

transmitting ~~the above~~ data bits modulated by codes C1 and C2, ~~C~~ and the data bits modulated by codes S1 and S2, ~~S are transmitted~~ respectively, by using two orthogonal ~~and fading synchronously~~ transmission channels, ~~and carrying the same data bits when modulation,~~ and

combining ~~while the~~ outputs from the two orthogonal transmission channels ~~are added together~~ after de-spreading and demodulating the data bits ~~demodulation~~.

4. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 1, ~~wherein the~~ with the step of spreading the code length and code number of the ~~basically~~ orthogonal complementary code group in a tree structure ~~refers to. If~~ includes the step of generating (C1, S1), (C2, S2) as follows: ~~is a pair of basically orthogonal complementary code group with code length N, the two pairs of orthogonal complementary code group with each code length 2N can be generated in the following way:~~

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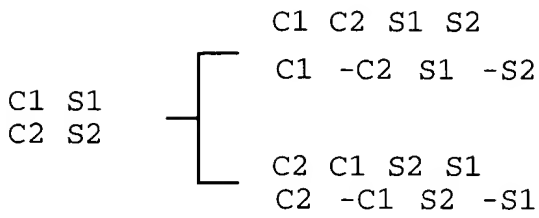

~~Wherein~~ with the values of the auto-correlation functions of the orthogonal complementary code group formed on upper and lower trees after spread ~~will be~~ zero everywhere except at the origin, ~~while~~ with values of the cross-correlation functions ~~will form~~ forming a Zero Correlation Window around the origin with the size of the window greater than or equal to 2N-1.

5. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 4, ~~wherein the above spread can be kept going on~~ with the step of spreading including the step of generating, using ~~in accordance with~~ the tree structure, ~~so as to generate~~ 2^{n+1} orthogonal complementary code groups with the code length equal to $N2^n$ and the width of the zero correlation window greater than or equal to 2N-1, in which n = 0,1,2, … is ~~the~~ a number of spread times.

6. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~

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claim 4 or 5, ~~wherein the~~ with the step of spreading including the step of spreading with an equivalent transformation ~~can be~~ applied to the ~~resultant~~ orthogonal complementary code group.

7. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 6, ~~wherein the~~ with the step of spreading including the step of swapping ~~equivalent transformation can be swap of the~~ forward and backward position of the ~~resultant~~ orthogonal complementary code group.

8. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 6, ~~wherein the~~ with the step of spreading including the step of swapping ~~equivalent transformation can be swap of the~~ up and down position of the resultant orthogonal complementary code group.

9. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 6, ~~wherein the~~ with the step of spreading including the step of negating ~~equivalent transformation can be negation of~~ code order of each code.

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10. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 6, ~~wherein the~~ with the step of spreading including the step of interlacing ~~equivalent transformation can be interlacement of~~ polarity of each code bit.

11. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 6, ~~wherein the equivalent transformation can be rotation of~~ with the step of spreading including the step of rotating each code bit in a complex plane ~~in a sequence or without sequence~~.

12. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 6, ~~wherein the transformation can be any~~ ~~wherein the~~ with the step of spreading including the step of transforming with an equivalent transformation ~~that is proven in~~ from mathematics.

13. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 1, ~~wherein the~~ with the step of spreading including the step of spreading with a pair of ~~basically~~ orthogonal

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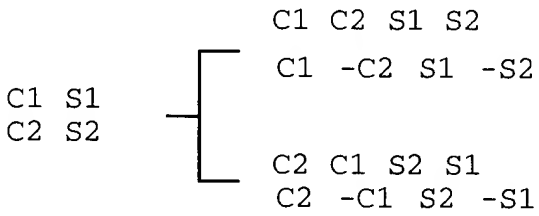
complementary code group (C1, S1), (C2, S2) ~~refers to that~~ with the auto-correlation function and cross-correlation function, ~~is~~ respectively, the summation of ~~acylic~~ auto-correlation with cross-correlation functions between codes C, and the summation of ~~acylic~~ auto-correlation with cross-correlation functions between codes S.

14. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 13, ~~wherein the~~ with the step of spreading including the step of generating a code length and the width of the zero correlation window of the pair of ~~basically~~ orthogonal complementary code groups ~~can be~~ spread in the following way:



wherein if each code length of the pair of ~~basically~~ orthogonal complementary code group (C1, S1), (C2, S2) is N, and the width of the zero correlation window is L, then each code length of the spread pair of ~~basically~~ orthogonal complementary code group will

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be 2N, ~~while~~ with the width of the zero correlation window ~~will be~~ 2L+1.

15. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 14, ~~wherein~~ with the step of spreading including the step of spreading, when N = 2, the pair of ~~basically~~ orthogonal complementary code group as follows ~~will be~~:

(++ , +-)

(-+ , --)

wherein "+" means +1 and "-" -1, while the width of the zero correlation window will be 3.

16. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 14 or 15, ~~wherein the above spread can be kept going on in accordance with the~~ with the step of spreading including the step of spreading with a tree structure so as to generate 2^n pairs of

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orthogonal complementary code groups with the code length $N2^n$ and the width of the zero correlation window as $2^nL+2^{n-1}+2^{n-2}+2^{n-3}+\ldots+2^1+1$, in which n = 0,1,2, … is ~~the~~ a number of spread times.

17. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 16, ~~wherein the~~ with the step of spreading including the step of spreading with an equivalent transformation ~~can be applied~~ to the ~~resultant basically~~ orthogonal complementary code group.

18. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 17, ~~wherein the~~ with the step of spreading including the step of swapping ~~equivalent transformation can be swap of the~~ a forward and backward position of the ~~resultant~~ orthogonal complementary code group.

19. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 17, ~~wherein the equivalent transformation can be swap of~~ with the step of spreading including the step of swapping the up

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and down position of the ~~resultant~~ orthogonal complementary code group.

20. (previously presented) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 17, ~~wherein the~~ with the step of spreading including the step of negating ~~equivalent transformation can be negation of~~ code order of each orthogonal complementary code group.

21. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 17, ~~wherein the equivalent transformation can be interlacement of~~ with the step of spreading including the step of interlacing polarity of each code bit.

22. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 17, ~~wherein the equivalent transformation can be rotation of~~ with the step of spreading including the step of rotating each code bit in complex plane in a sequence or without sequence.

23. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread

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spectrum multiple access codes as set forth in ~~according to the~~ claim 17, ~~wherein the~~ with the step of spreading including the step of transforming with an ~~transformation can be any~~ equivalent transformation ~~that is proven in~~ from mathematics.

24. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 3, wherein the orthogonal ~~and fading synchronously~~ transmission channel ~~refers to the~~ includes an orthogonal polarized wave.

25. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 3, wherein the orthogonal ~~and fading synchronously~~ transmission channel ~~is the~~ includes time slots without overlap to each other.

26. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 1, ~~wherein~~ with the step of spreading including the step of spreading with one code or multiple access codes ~~can be allocated~~ based on the needs of the different data rate and

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services of each subscriber to actualize ~~the~~ a different quality of priority level services.

27. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 1, ~~wherein the~~ with the step of spreading including the step of spreading with a required spreading spectrum access codes adaptively generated based on the zero correlation window required by ~~the~~ different propagation modes, different number of subscribers, and ~~the~~ needs of different data rate and ~~as well as~~ services, ~~so that there are~~ thereby no inter-signal interference (ISI) and multi access interference (MAI) are in the corresponding spreading spectrum CDMA system.

28. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 1, ~~wherein the~~ with the step of spreading including the step of spreading with a resultant multiple access codes by the equivalent transformation can be used to meet the needs of network configuration, handoff and enhancement of system capacity, ~~etc~~ in cellular mobile or fixed point to multi points wireless telecommunications system.

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29. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 1, ~~wherein~~ with the step of spreading including the step of spreading with a ~~coding can be made, as one of the~~ complex codes ~~, by using complex codes~~.

30. (currently amended) The ~~construction~~ method ~~of the spreading~~ used by the radio system, for generating spread spectrum multiple access codes as set forth in ~~according to the~~ claim 1, ~~wherein it can be applied to any~~ further including any of TD/CDMA, FD/CDMA, WD/CDMA, SD/CDMA or CDMA communications system.

31. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 1, with the spreading step forming the zero correlation window about the origin with the size the zero correlation window greater than or equal to 2N-1.

32. (new) A method used by a radio system, for generating spread spectrum multiple access codes with a zero correlation window, comprising the steps of:

selecting a pair of complementary code groups (C1, S1), (C2, S2) with each code within the complementary code groups

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having a code length with N chips, where N is a number of chips; and

spreading codes from the complementary code groups, with values of auto-correlation functions of each code of the complementary code groups being zero except at the origin, with the cross-correlation functions of each code of the complementary code groups forming the zero correlation window about the origin.

33. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 32, with the spreading including the step of step forming the zero correlation window with a size of the zero correlation window greater than or equal to a maximum relative time delay inside each access code of the radio system.

34. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 32, further comprising the steps of:

transmitting data bits modulated by codes C1 and C2, and the data bits modulated by codes S1 and S2, respectively, by using two orthogonal transmission channels, and

combining outputs from the two orthogonal transmission channels after de-spreading and demodulating the data bits.

35. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in

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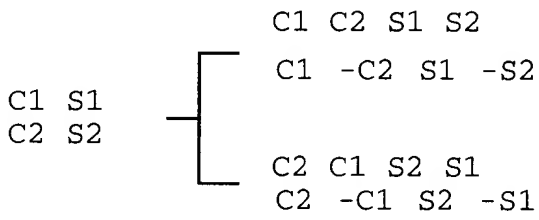
claim 32, with the step of spreading the code length and code number of the complementary code group in a tree structure includes the step of generating (C1, S1), (C2, S2) as follows:



with the values of the auto-correlation functions of the complementary code group formed on upper and lower trees after spread zero everywhere except at the origin, with values of the cross-correlation functions forming a zero correlation window around the origin with the size of the window greater than or equal to 2N-1.

36. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 35, with the step of spreading including the step of generating, using the tree structure, 2^{n+1} complementary code groups with the code length equal to $N2^n$ and the width of the zero correlation window greater than or equal to 2N-1, in which n = 0,1,2, … is a number of spread times.

37. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in

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claim 35 or 36, with the step of spreading including the step of spreading with orthogonal or quasi-orthogonal chip-sequence signals.

38. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 37, with the step of spreading including the step of swapping forward and backward positions of the complementary code group.

39. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 37, with the step of spreading including the step of swapping up and down positions of the complementary code group.

40. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 37, with the step of spreading including the step of negating code order of each code.

41. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 37, with the step of spreading including the step of interlacing polarity of each code bit.

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42. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 37, with the step of spreading including the step of rotating each code bit in a complex plane.

43. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 37, with the step of spreading including the step of spreading with orthogonal or quasi-orthogonal chip-sequence signals.

44. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 32, with the step of spreading including the step of spreading with a pair of orthogonal complementary code group (C1, S1), (C2, S2).

45. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 44, with the step of spreading including the step of generating a code length and the width of the zero correlation window of the pair of complementary code groups spread as follows:

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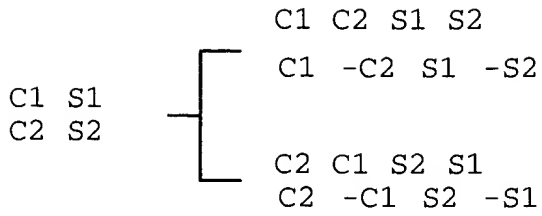

wherein if each code length of the pair of orthogonal complementary code group (C1, S1), (C2, S2) is N, and the width of the zero correlation window is L, then each code length of the spread pair of orthogonal complementary code group will be 2N, with the width of the zero correlation window 2L+1.

46. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 45, with the step of spreading including the step of spreading, when N = 2, the pair of orthogonal complementary code groups as follows:

(++ , +-)

(-+ , --)

wherein "+" means +1 and "-" -1, while the width of the zero correlation window will be 3.

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47. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 45 or 46, with the step of spreading including the step of spreading with a tree structure so as to generate 2^n pairs of complementary code groups with the code length $N2^n$ and the width of the zero correlation window as $2^nL+2^{n-1}+2^{n-2}+2^{n-3}+\ldots+2^1+1$, in which n = 0,1,2, ... is a number of spread times.

48. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 47, with the step of spreading including the step of spreading with an equivalent transformation to the orthogonal complementary code group.

49. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 48, with the step of spreading including the step of swapping forward and backward positions of the orthogonal complementary code group.

50. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 49, with the step of spreading including the step of swapping the up and down position of the orthogonal complementary code group.

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51. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 48, with the step of spreading including the step of negating code order of each orthogonal complementary code group.

52. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 48, with the step of spreading including the step of interlacing polarity of each code bit.

53. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 48, with the step of spreading with orthogonal or quasi-orthogonal chip-sequence signals.

54. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 48, with the step of spreading including the step of transforming with an equivalent transformation from mathematics.

55. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 34, wherein the orthogonal transmission channel includes an orthogonal polarized wave.

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56. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 34, with the step of transmitting with the orthogonal transmission channel including the step of transmitting using time slots.

57. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 32, with the step of spreading including the step of spreading with one code or multiple access codes based on requirements of the different data rate and services of each subscriber to actualize a different quality of priority level services.

58. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in claim 32, with the step of spreading including the step of spreading with spread spectrum access codes adaptively generated based on the zero correlation window required by different propagation modes, different number of subscribers, and needs of different data rate and services, thereby no inter-signal interference (ISI) and multi access interference (MAI) are in a corresponding spreading spectrum CDMA system.

59. (new) The method used by the radio system, for generating spread spectrum multiple access codes as set forth in

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